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THE REVIEW

DEVOTED TO THE INTERESTS OF THE AMERICAN SOCIETY FOR METALS

Volume VIII | SEPTEMBER, 1935 | No. 5

17th National Metal Congress Draws Many Celebrities

B. F. Shepherd *H. A. Buehler* *J. J. Crowe* *J. Mordica* *M. A. Grossmann* *E. J. Martin* *H. W. McQuaid* *H. B. Knowlton*

Just a few of the metallurgical headliners who will take part in the numerous activities at the National Metal Congress and Exposition in Chicago, Sept. 30 to Oct. 4. Benjamin F. Shepherd is president of the American Society for Metals, Henry A. Buehler president of the American Institute of Mining & Metallurgical Engineers, John J. Crowe of the American Welding Society, and John Mordica of the Wire Association. Dr. Marcus A. Grossmann will conduct a five-day lecture course on heat treatment and Dr. E. J. Martin will give three lectures on spectroscopy. Harry W. McQuaid will present the Campbell Memorial Lecture to the A.S.M. on Wednesday morning. Harry B. Knowlton, chairman of the Chicago Chapter of the A.S.M., will do his part by making out-of-town guests at home.

Two Divisions of A. I. M. E. to Meet

Programs of the Iron and Steel and Institute of Metals Divisions of the American Institute of Mining & Metallurgical Engineers will be of much interest to all attending the National Metal Congress in Chicago Sept. 30 to Oct. 4.

Each division will hold separate technical sessions at the Palmer House on Tuesday, Wednesday, and Thursday, Oct. 1 to 3, with the exception of Wednesday afternoon when the meetings will be at the International Amphitheatre.

One of the important events of the Iron and Steel Division's program is a round table on Qualities of Pig Iron. This will be a general discussion without formal papers and will show the advances made since the first round table on this subject, which was so successful in 1927. A second round table will be inaugurated with two formal papers on Temperature Measurements in Liquid Iron and Steel.

The Institute of Metals Division will have sessions on Constitution, Reactions in Alloys, and Gas-Metal Systems.

The Executive Committees of the two divisions will meet separately at luncheon on Wednesday.

Both divisions will attend the Institute dinner on Wednesday evening, and will meet again jointly on Thursday afternoon to hear Nobel prize-winner Harold Clayton Urey deliver the annual Science Lecture. Dr. Urey, discoverer of heavy hydrogen, will speak on "Recent Developments in Isotopic Chemistry."

Complete details of these programs will be found on page 3.

Wire Association Plans to Hold Informal Discussions

Informal discussions will be a feature of the program of the Wire Association at the National Metal Congress in Chicago, Sept. 30 to Oct. 4. These will start after the first day of the convention, which will be devoted to registration and "get-together," directors' meeting, Program Committee meeting, and annual meeting of the Association.

Gatherings will be held every day at the headquarters in Hotel Congress from 9:00 a. m. to 11:00 p. m. These will provide an opportunity to discuss informally routine problems and to exchange opinions and ideas regarding equipment and processes used in the industry.

For the first time an entire session will be devoted to open discussions of the joint problems of users of wire and the manufacturers who supply them.

A regular program of research papers is planned for morning and afternoon sessions on Tuesday, Wednesday, and Thursday. Details of this program will be found on page 3.

The annual dinner of the Wire Association will be held Wednesday evening at the Congress Hotel.

22 Papers Scheduled on Welding Society Program

Twenty-two papers have been planned for the seven technical sessions of the American Welding Society holding its 15th fall meeting in Chicago in conjunction with the National Metal Congress and Exposition.

The first session on Monday afternoon will open with the introduction of the president of the Society, an address of welcome, the presentation of the Miller Memorial Medal Award, and two technical papers. The other sessions will be devoted to fundamental research in welding, general subjects, a symposium on Methods of Minimizing Distortion and one on Low Alloy Steels for Welding Purposes. Titles of the papers are contained in the complete program given on page 7.

A dinner meeting of the Board of Directors will be held on Monday at 6:30, and the annual banquet on Thursday evening at the Palmer House.

Tuesday is known as Milwaukee Night, with a stag entertainment at 10 p. m. in Dining-Room 14.

No technical sessions will be held on Friday, the day being given over to inspection trips to various plants in and around Chicago, where varied applications of welding will be seen. Two routes will probably be arranged and provision made to accommodate both groups at lunch time.

England and Australia Are Represented at Congress

From such far points as Australia and England come two members of the American Society for Metals to attend the National Metal Congress and Exposition in Chicago the week of Sept. 30.

J. A. Stewart, who is in charge of tool making and steel treating for McPherson's Ltd., iron and tool merchants and manufacturers of bolts and machinery at Melbourne, Australia, has been in the States since August and plans to be in Chicago in October.

From Birmingham, England, comes A. Glynne Lobley, general manager of Birmingham Electric Furnaces, Ltd., to attend the Congress.

Largest Convention in Five Years To Open in Chicago September 30

A. S. M. Technical Sessions Cover Varied Subjects

High temperature properties of metals will take a leading role in the A.S.M. technical program at the National Metal Congress. Two sessions occupying a whole day will be devoted to this subject, with papers and discussions by the leading authorities.

The interest shown in last year's Grain Size Symposium indicated the desirability of again devoting some time to this subject and a group of papers on the various aspects of grain size and its effect will be presented on Wednesday afternoon. Other sessions will be concerned with tool steels, steel making, metallography, and research. The complete program will be found on page 8.

There will be technical sessions every day at 10:00 in the morning at the Palmer House and 2:00 in the afternoon at the International Amphitheatre. In order to have plenty of time for discussion, sessions were limited to three papers each, but so many worthwhile contributions were received that it was found necessary to have two simultaneous sessions on Tuesday morning.

Each morning during the convention the authors of papers to be presented will meet at breakfast with the chairmen who will preside at the technical sessions scheduled for that day and with Ray T. Bayless, assistant secretary of the American Society for Metals. This will give them an opportunity to become acquainted, discuss arrangements for lantern slides, and settle details of the day's program.

Wednesday at 9:30 a. m. the annual meeting of the A.S.M. will be held, at which officers will be elected and reports of Society activities presented. At this time the "President's Bell" will be awarded to that chapter which, in the opinion of President Shepherd, has done the most outstanding work during the past season.

Following the business meeting the Campbell Memorial Lecture, an outstanding feature of the Metal Congress, will be presented by Harry W. McQuaid of Republic Steel Corp., famed as co-originator of the McQuaid-Ehn grain size test. Besides being an authority on grain size, Mr. McQuaid is nationally known as a specialist in gear steels and case hardening.

Two series of educational lecture courses will round out a full and varied program. Every day at 4:30 at the International Amphitheatre Dr. Marcus A. Grossmann of Illinois Steel Co. will lecture on the heat treatment of steel, while Dr. E. J. Martin, Research Division, General Motors Corp., will conduct a course on spectrographic analysis, meeting Monday, Tuesday, and Wednesday evenings at 7:30, also at the Amphitheatre. Details of these lecture courses will be found on page 2.

Over 200 Exhibits Will Fill Internat'l Amphitheatre

Technical papers are receiving their final polishing.

Advertising men are racking their brains for finishing touches to make their exposition booths the finest yet.

Programs are receiving last-minute rearrangements so none will conflict.

And all over the country metal men are consulting road maps and railroad schedules, packing their bags, and eagerly awaiting the opening of the Seventeenth Annual National Metal Congress and Exposition in Chicago on Sept. 30 for a five-day session.

Over 35,000 men are expected to see the Exposition at the International Amphitheatre, and attendance at the 40 technical sessions is forecast at 10,000.

Of the five cooperating societies, the American Society for Metals, the American Welding Society, and the Institute of Metals and Iron and Steel Divisions of the American Institute of Mining and Metallurgical Engineers will maintain headquarters at the Palmer House. The Wire Association will register at the Congress Hotel.

The largest exposition in five years will open at the International Amphitheatre on Monday, Sept. 30. It was planned at first to use only the main exhibit hall and one wing of the Amphitheatre, but when over 200 firms reserved space, a fourth again as many as last year, it was found necessary to use the entire space of the Amphitheatre—more than 164,000 sq. ft.

The Exposition will open at noon and continue until 10:00 p. m. daily, except Thursday, when it will close at 6:00 p. m. so that all members may attend the A.S.M. banquet. Admittance to the Exposition will be limited to adults who must register at the door.

Exhibits will be colorful and striking; furnaces, machine tools, testing instruments, heat treating and welding equipment will be seen in actual operation. Samples of steels and alloys and all the materials of the metal working industries will be shown.

A complete list of exhibiting firms and their products is given on p. 6.

Hitting the Mark

A.S.M.'s own Raymond Theodore Bayless, assistant secretary and editor of *Transactions*, is hitting the mark again by having been selected as a member of the Ohio State Civilian Rifle Team at their recent tryouts at Camp Perry, Ohio.

Ray was 6th high man out of some 300 who were trying out for the team. Consequently, he will be on the team which will represent Ohio in the National Match contest now being held at Camp Perry.

W. H. E.

THE REVIEW

Devoted to the interests of the American Society for Metals

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RAY T. BAYLESS.....*Editor*
M. R. HYSLOP.....*Managing Editor*

Volume VIII **Cleveland, O., September, 1935** **No. 5**

Heat Treatment Is Subject of Course

One of the valuable features of the National Metal Congress and Exposition will be a series of five lectures on the "Principles of Heat Treatment," presented by Dr. Marcus A. Grossmann, of Illinois Steel Co.

These lectures will be delivered every day from Sept. 30 to Oct. 4 at 4:30 p. m. in the auditorium of the International Inn, adjoining the Exposition Hall.

The course is offered without cost to members of the American Society for Metals. Advance enrollment using the coupon below is urged, although registrations will be taken at the Palmer House and International Amphitheatre until noon on Monday, Sept. 30. Registration at the Exposition is made on presentation of A.S.M. membership card. Members not wishing to attend all lectures may enroll for individual lectures on Monday.

Dr. Grossmann's lectures will give a simple, straight-forward explanation of the heat treatment of steel. The technical aspects will be clarified and explained in such a way as to be useful to both the technical and practical man.

A graduate of Massachusetts Institute of Technology and Harvard, and at present director of research for Illinois Steel Co., Dr. Grossmann is one of the foremost experts on carbon and alloy steels. He has contributed many valuable papers on the subject and presented the Campbell Memorial Lecture at the convention in 1930.

A brief outline of the lectures is as follows:

Lecture 1—PRINCIPLES OF HARDENING.
Progressive changes in hardness and structure on heat quenching; progressive changes during slow cooling; effect of carbon content; a simple iron-carbon diagram.

Lecture 2—PRINCIPLES AND VARIATIONS OF HARDENING.
Hardness distribution in quenching larger sizes; depth of hardening in an alloy steel, in various sizes; comparison of water quenching and oil quenching; time-quenching.

Lecture 3—NORMALIZING, TEMPERING, HOT QUENCHING.
Normalizing (air-cooling); tempering (drawing) after quenching; the brittle drawing-range; temper brittleness; quenching into hot liquid baths; structures and properties obtained by hot quenching.

Lecture 4—CASE HARDENING, GRAIN SIZE, ANNEALING.
Carburizing; penetration of carbon; hardening after carburizing; cyaniding; nitriding; grain size, its nature and influence; variations in grain size; the coarsening temperature; annealing.

Lecture 5—IRON CARBON DIAGRAM, EQUIPMENT FOR HEAT TREATING, COMMERCIAL HEAT TREATING DATA.
The complete iron-carbon diagram, heat treating equipment in industry, a survey of industrial heat treatments.

E. J. Martin to Lecture on Spectroscopy at Congress

"Spectrographic Analysis" is the timely subject of a series of three lectures to be given by Dr. E. J. Martin, Research Division, General Motors Corp., Detroit, at the National Metal Congress in Chicago the week of Sept. 30.

These lectures, which are of an educational nature, will be held on Monday, Tuesday, and Wednesday at 7:30 p. m. at the International Amphitheatre. They will be open to anyone attending the Congress.

Spectrographic analysis, for some time regarded as an instrument of the scientist and physicist, is rapidly finding an important place in progressive metallurgical laboratories as a valuable technological method for the detection and determination of elements present in steels and alloys.

The first lecture will be devoted to equipment and source of light, the second to qualitative analysis, and the third to quantitative analysis.

Dr. Martin's interest in spectroscopy dates from his education at University of Michigan, where he specialized in that subject. After graduation he spent three years at Case School of Applied Science as assistant professor of physics. Since 1924 he has been with General Motors Research Laboratories, applying physics to automotive research.

Reduced Railroad Rates Offered for Convention

Reduced rates on all railroads will be accorded to members of the American Society for Metals and the other societies participating in the National Metal Congress, as well as exhibitors at the Exposition, on the identification certificate plan.

The reduced rate applies to round trips only and is based on one and one-third of the current one-way fare. Certificates have been sent to members, which, when presented to the ticket agent, will entitle the holder and the members of his family to this reduction.

Tickets will be issued on these certificates between Sept. 26 and Oct. 2. A 30-day return limit is allowed, and members have the privilege of returning by a different route from the one used to go to Chicago.

Airplane schedules and maps showing the entrances of various state and national highways into Chicago have also been sent with the railroad certificates to accommodate those wishing to fly or motor to the convention.

ADVANCE ENROLLMENT BLANK—"Heat Treatment" Course
Forward to American Society for Metals,
7016 Euclid Ave., Cleveland, Ohio.

☐ I am a member of the.....Chapter of the AMERICAN SOCIETY FOR METALS.

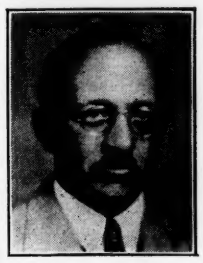
☐ I plan to become a member of the.....Chapter and would appreciate receiving application blank.

Please enroll me for the series of five lectures on "PRINCIPLES OF HEAT TREATMENT" to be given by M. A. Grossmann during the National Metal Congress & Exposition in Chicago, Sept. 30, Oct. 1, 2, 3, 4, 1935.

My Name .....

My Address .....

Who — What — Where



A. L. Feild

The melting and refining of steel is the specialty of the gentleman on the left with the penetrating eye, and it is with the object of building up a prominent department in this subject that Carnegie Institute of Technology has appointed ALEXANDER L. FEILD professor of metallurgy.

The new professor will leave two positions when the academic year opens this month—one as consulting engineer for Rustless Iron Corp. of America and the other as president of Alloy Research Corp., both of which he has held since 1931.

After graduation from University of North Carolina (A.B.) and North Carolina State College (M.S.), Mr. Feild plunged right into the problems of steel melting at the Bureau of Mines in Pittsburgh. After four years there he was research engineer successively for Union Carbide & Carbon Corp., Central Alloy Steel Corp. for two years, again U. C. & C., and finally Simonds Saw and Steel Co. from 1929 to 1931.

Mr. Feild has presented numerous articles in A.S.M. and other technical publications and is the author of the chapter on melting and refining in "The Book of Stainless Steels."

* * *

Another Mr. FFIELD (PAUL D. with two f's), who is also author of a portion of "The Book of Stainless Steels" (on airship construction) and has also been a member of the A.S.M. for some years, steps into the news by giving up airships for steamships.

Since 1930 he has been research engineer in charge of metallurgy for Goodyear-Zeppelin Corp., where he nursed both the Akron and the Macon through the metallurgical aspects of their construction. He is now materials engineer at Bethlehem Shipbuilding Corp., Quincy, Mass.

Mr. Ffield is a graduate of Ampleforth College, Yorkshire, England, and worked for D. Napier & Sons, British engine manufacturers, and Armstrong-Siddeley Co., aircraft manufacturers. He came to the United States in 1926 as chief inspector for Fairchild Airplane Mfg. Co., where he stayed until joining Goodyear in 1930.

* * *

Clyde L. Frear, former member of the New York Chapter, has just accepted a position as metallurgical engineer for Kelsey-Hayes Wheel Co. and will transfer to the Detroit Chapter.

He was previously with Eastman Kodak Co.

Carborundum Purchases Hutto Engineering Assets

The Carborundum Co., Niagara Falls, N. Y., has purchased the personal assets and good-will of the Hutto Engineering Co., Inc., Detroit, manufacturer of cylinder honing and grinding tools for use in the manufacture of motor cars, diesel engines, air compressors, and similar equipment requiring high accuracy and finish.

The operations of the Hutto Company will be continued and expanded as a new division of The Carborundum Co., and will be carried on in the present plant located at 515 Lycaste Avenue, Detroit.

The present management is being continued. Joseph A. Carlin has been appointed manager and John E. Kline chief engineer of this new division.

Sales Representative Named

American Electric Furnace Co., Boston, announces the appointment of Carman Adams, Inc., 2970 W. Grand Blvd., Detroit, as direct factory representative for the sales and service of all products of the company for the state of Michigan.

In his new position as materials engineer for York Ice Machinery Corp., FRANK J. ALLEN will be responsible for the specification and standardization of all materials. Since coming to this company from the Armstrong Cork Co., where he had charge of materials specifications in the Engineering Department, Mr. Allen has been engaged in the manufacturing development of new products in the air conditioning field.

Frank Allen is the new chairman of the York Chapter and veteran reporter of that organization's doings to THE REVIEW.

* * *

A.S.M. Past-President FREDERICK G. HUGHES, vice-president of New Departure Mfg. Co., Bristol, Conn., has been elected a director of the Acme Wire Co., New Haven, to fill the vacancy caused by the death of Alexander Harper.

* * *

WM. J. MERTEN, metallurgical engineer for Pittsburgh Rolls Corp., Pittsburgh, member of the Metals Handbook Committee of the A.S.M., sails Sept. 28 on the Europa for a short visit to Berlin. He will return about Oct. 24.

* * *

An engineer whose advice on steel castings and foundry practice will be extremely valuable is GEORGE BATTY, who has resigned from the Crucible Steel Casting Co., Lansdowne, Pa., to do consulting work.

George Batty

Mr. Batty's specialization in steel castings started back in 1921 in association with F. A. Melmoth, shortly after he came to the United States from England, where he was educated at Sheffield University and spent nine years in various plants engaged in steel making and the development of tool steels.

He was works manager and technical director of National Steel Foundry, Scotland, from 1923 to 1927, did consulting work in Detroit for a year, and was then appointed director of the Steel Castings Development Bureau.

Mr. Batty is a member of the Philadelphia Chapter.

* * *

SIR ROBERT HADFIELD, Bart., F.R.S., first honorary member of the A.S.M., back when it was the Steel Treaters' Research Society, has been awarded the Albert Medal for 1935 by the Royal Society of Arts, London, England, for his researches in metallurgy and his services to the steel industry.

* * *

HOWARD G. PORTER, Hiram College, A.B. 1922; Ohio State University, 1923; has left Newton Steel Laboratory where he was employed for eight years, to become metallurgist for Niles Rolling Mill Co., Niles, Ohio. He is a member of the Cleveland Chapter.

* * *

W. R. FRAZER, A.S.M. member for ten years, has resigned as metallurgist for Eclipse Aviation Corp., East Orange, N. J., to become metallurgist for Union Twist Drill Co., Athol, Mass.

* * *

Despatch Oven Co. announces the appointment of GORDON A. WEBB and A. L. KERSHAW, Curtis Bldg., Detroit, as district engineers in that territory. Both are members of the Detroit Chapter, Gordon Webb having served as secretary and chairman during past years.

* * *

WAYNE L. COCKRELL, member of the Publication Committee of the American Society for Metals, one-time secretary-treasurer of the Tri-City Chapter, has joined the Link Belt Co. in Philadelphia. His job is to see that the company's new heat treat shop for nitriding and carburizing runs properly and also to give the plant any other metallurgical services that may be useful.

Meetings of the Institute of Metals and Iron & Steel Divisions A. I. M. E.

Institute of Metals Division

Tuesday, Oct. 1

10:00 a. m.—Palmer House

Constitution Session

AN INVESTIGATION OF THE ZINC-RICH PORTION OF THE SYSTEM IRON-ZINC, by E. C. Truesdale, R. L. Wilcox and J. L. Rodda.

INFLUENCE OF LATTICE DISTORTION ON DIFFUSION IN METALS, by V. G. Mooradian and John T. Norton.

A STUDY OF THE MOLYBDENUM-CARBON SYSTEM, by W. P. Sykes, Kent R. Van Horn and C. M. Tucker.

2:00 p. m.—Palmer House

Reactions in Alloys

STUDIES OF PHASE CHANGES DURING AGING OF ZINC ALLOY DIE CASTINGS, II—CHANGES IN THE SOLID SOLUTION OF ALUMINUM IN ZINC AND THEIR RELATION TO DIMENSIONAL CHANGES, by M. L. Fuller and R. L. Wilcox.

QUENCHING STRESSES AND THE PRECIPITATION REACTION IN ALUMINUM-MAGNESIUM ALLOYS, by R. M. Brick, Arthur Phillips and A. J. Smith.

NOTES ON THE CRYSTALLIZATION OF COPPER, by Alden B. Greninger.

Wednesday, Oct. 2

12:30 p. m.—Palmer House

Luncheon Meeting, Executive Committee, Institute of Metals Division

2:00 p. m.—International Amphitheatre

Gas-Metal Systems

REDUCTION OF CHROMIC OXIDE BY HYDROGEN, by F. C. Kelley.

SOLUBILITY OF OXYGEN IN SOLID COBALT AND THE UPPER TRANSFORMATION POINT OF THE METAL, by A. U. Seybolt and C. H. Mathewson.

THERMAL AND ELECTRICAL CONDUCTIVITIES OF COPPER ALLOYS, by Cyril Stanley Smith and Earl W. Palmer.

AN APPARATUS FOR DETERMINING CREEP IN SINGLE CRYSTALS, by R. F. Miller.

6:30 p. m.—Palmer House

Dinner With Iron and Steel Division

METALLURGY IN NORWAY, by Carl W. Volz, Norwegian Smelting Works, Electric Furnace Products Co.

Thursday, Oct. 3

4:00 p. m.—Palmer House

Science Lecture

Joint Session With Iron and Steel Division

RECENT DEVELOPMENTS IN ISOTOPIC CHEMISTRY, by Harold Clayton Urey, Columbia University.

Iron & Steel Division

Tuesday, Oct. 1

10:00 a. m.—Palmer House

Blast Furnace and Raw Materials Session

PRODUCTION AND PREPARATION OF BLAST FURNACE FLUX, by Paul C. Hodges.

BLAST FURNACE AIR-BLAST BENEFICIATION, by Theodore Nagel.

FIVE YEARS OF PROGRESS IN SOUTHERN MERCHANT IRON PRODUCTION, by Francis H. Crockard.

BENEFICIATION OF MICHIGAN IRON FORMATIONS, by Frank J. Tolonen.

2:00 p. m.—Palmer House

Round Table on Qualities of Pig Iron

A General Discussion Without Formal Papers.

Wednesday, Oct. 2

12:30 p. m.—Palmer House

Luncheon Meeting, Executive Committee, Iron and Steel Division

2:00 p. m.—International Amphitheatre

General Session

THE INITIAL STAGES OF THE MAGNETIC AND AUSTENITIC TRANSFORMATIONS IN A CARBON STEEL, by I. N. Zavarine.

NOTES ON THE ORIGIN AND GROWTH OF GRAPHITE NUCLEI IN SOLID AND LIQUID IRON SOLUTIONS, by H. A. Schwartz and Wolfram Ruff.

SEPARATION OF HEMATITE BY MEANS OF HYSTERETIC REPULSION, by E. W. Schilling and Harwick Johnson.

6:30 p. m.—Palmer House

Dinner With Institute of Metals Division

METALLURGY IN NORWAY, by Carl W. Volz, Norwegian Smelting Works, Electric Furnace Products Co.

Thursday, Oct. 3

9:30 a. m.—Palmer House

Temperature Measurements of Liquid Iron and Steel

SOME METALLURGICAL APPLICATIONS OF THE FITTERER PYROMETER, by G. R. Fitterer.

TEMPERATURE MEASUREMENTS WITH THE DISAPPEARING-FILAMENT OPTICAL PYROMETER, by W. E. Forsythe.

4:00 p. m.—Palmer House

Science Lecture

Joint Session With Institute of Metals Division

RECENT DEVELOPMENTS IN ISOTOPIC CHEMISTRY, by Harold Clayton Urey, Columbia University.

October Metal Progress Has Ten Large Sections

Last year the directors of METAL PROGRESS got together with the advertising and editorial departments and had an inspiration. The result was the October issue—ten separate magazines each with cover, editorial and advertising matter, and each covering a separate subdivision of the metal field—all bound into one large reference book giving the latest developments in the metallurgical industries.

The same method of presentation is being used for the October 1935 issue. This will be the National Metal Congress number of the magazine and is designed to correlate and summarize the new products and processes, new scientific developments and discoveries, that will be exhibited and talked about at the Congress.

An even larger and more complete volume is in preparation this year and will be distributed to members before the Convention opens in Chicago, Sept. 30.

The ten fields of the metal industry to receive separate consideration in the October issue of METAL PROGRESS are as follows: Alloy and Tool Steels; Stainless Steels; Sheet, Strip and Cold Drawn Steels and Carbon Steels; Non-Ferrous Metals; Heat and Corrosion Resisting Castings; Furnaces and Refractories; Heat Treating and Finishing; Testing and Control Instruments; Welding and Cutting; Forgings and Forging Machinery.

Palmer House — Official Convention Headquarters

Monday, Sept. 30, will be the beginning of a busy week at the Palmer House, Chicago, for this large and modern hotel will be the general headquarters for the National Metal Congress.

Registration will begin on Monday for the A.S.M. and A.W.S., and on Tuesday for the two divisions of the A.I.M.E.

The walls of the ballroom and other meeting rooms will resound with metallurgical terms during the course of nearly 40 morning and afternoon technical sessions, when new developments will be revealed and learned discussions will take place by the leading scientists in the metallurgical industries.

Banquets and dinner meetings will be well taken care of by the hotel's excellent cuisine, and facilities for evening relaxation and entertainment will not be found lacking.

Room reservations should be sent direct to the Palmer House. Rates are as follows:

Room for one—$3,00, $3.50, $4.00, $4.50, $5.00 and $6.00.

Double bedrooms—$5.00, $6.00, $6.50, $7.00, $8.00, $9.00 and $10.00.

Twin bedrooms—$6.00, $6.50, $7.00, $8.00, $9.00 and $10.00.

Suites of two rooms—$10.00 and up.

Mayor Discovered at York's Picnic

Reported by I. Will Nottellall

York Chapter, July 13—The first problem confronting the special correspondent appointed by THE REVIEW to cover the York Chapter's annual picnic was to find Fisher's Farm.

He first called upon Mayor Anstine for help, but finding him out, had to rely upon his own resources. (Later the Mayor was discovered at the picnic. He readily admitted that the reason he had attended only three York Chapter picnics was that so far there had only been three.)

The location was finally found by following arrows tacked to poles and trees. The height of these signs indicates York's tall Bill Allen as bill-poster.

Everybody was having a fine time when this reporter arrived so he proceeded to do likewise. A special place had been set aside for the kegs of cold liquid (this refreshing drink was called by the curious name "beer"). Either too much or too little of this refreshment may have been the reason the York boys, led by Bill Allen and Elf, fell so badly in kitten ball to the Harrisburg contingent, led by Whitmoyer.

Tom Moore of the Philadelphia Chapter also owned up to his third picnic and third good time. His companion, Sam Armer, enjoyed himself except that he lost one piece of prime bologna, 2½ by 30 in. long. The finger of suspicion points at the aforesaid Tom Moore—a beautiful friendship destroyed by a hunk of sausage!

Since the picnic it has been learned that the Bennett-Brown-Allen (Frank this time) team has been invited to the International Bakers' Convention to give an exhibition on sandwich making. Bennett slices the rolls, Brown applies the ham, and Scotty Allen trims off the excess (at least that's what he calls it).

Sunday morning on the way to church George O'Neill found the explanation of the dirt on his white pants. It seems it was muddy between the telephone poles on his avenue.

Everybody says that John Bennett and his aide, S. W. Brown, did a bang-up job, and Charlie Strickler adds that the Chapter made a profit, too.

Events Scheduled by the Wire Association

Tuesday, Oct. 1

9:30 a. m.—Hotel Congress

Technical Session

ACID CLEANING AND MATERIAL HANDLING OF RODS AND WIRE, by Frederick A. Westphal, Sheffield Steel Co., Kansas City, Mo.

MODERN ACID HANDLING METHODS LOWER PICKLING COSTS, by J. R. Hoover, B. F. Goodrich Co., Akron, Ohio.

2:00 p. m.—Hotel Congress

Technical Session

HARD AND SOFT COPPER WIRE, by Rudolph A. Schatzel, General Cable Corp., Rome, N. Y.

NOTES ON THE USE OF BACK PULL IN WIRE DRAWING, by Paul M. Mueller, Revere Copper & Brass, Inc., New York City.

ELECTROLYTIC COPPER—Discussion.

Wednesday, Oct. 2

9:30 a. m.—Hotel Congress

Grain Size Session

GRAIN SIZE AND ITS INFLUENCE ON THE MANUFACTURE OF STEEL WIRE, by B. L. McCarthy, Wickwire-Spencer Steel Co., Buffalo.

2:00 p. m.—Hotel Congress

Grain Size Session

THE EFFECT ON THE PHYSICAL PROPERTIES OF BENDING COPPER WIRE OF DIFFERENT GRAIN SIZES, by L. B. Barker and C. A. Bailey, General Electric Co., Schenectady, N. Y.

8:00 p. m.—Hotel Congress

Informal Dinner

INDUSTRIAL RELATIONS AS APPLIED TO THE WIRE INDUSTRY, by E. W. Kempton, American Steel & Wire Co., Cleveland.

Award of the Wire Association Medal.

Thursday, Oct. 3

9:30 a. m.—Hotel Congress

Technical Session

COLD HEADING WIRE, by Leroy D. Seymour, Youngstown Sheet & Tube Co., Youngstown, Ohio.

TESTS AND TESTING, by C. A. Kellogg, Continental Steel Corp., Kokomo, Ind.

2:00 p. m.—Hotel Congress

Customer Relations Session

SAVE ON WIRE BY PROPER ORDERING, by Kenneth Murray, Republic Steel Corp., Chicago.

CUSTOMER RELATIONS—Open Discussion.

Free Literature — Mail Coupon Below

Forging Service
An illustrated folder shows a number of unusual equipments used in the shops of the Kropp Forge Co., including the acetylene torch pantograph, bar straightening equipments, etc. Bulletin Ox-77.

Metallographic Methods
"WACO Service" suggests application of the newer methods to daily routine. Included are the new bakelite specimen mount, low cost polishers and grinders, and an offer of sample Selvyt polishing cloth. Wilkens-Anderson Co. Bulletin Ox-7.

Blast Gates
A blast gate that combines the full pipe area of a heavy gate valve with the quick action of a stop-cock and costs less than either is described and illustrated in a folder by W. S. Rockwell Co., manufacturers of industrial furnace equipment. Bulletin Ox-34.

Laboratory Furnaces
Tiny induction furnaces which will melt ½ lb. of steel in 8 min. or 4 lb. of copper in 35 min. find a wide variety of uses in many kinds of laboratories. Ajax Electrothermic Corp. tells all about these small laboratory furnaces and the 3-kw. converter used with them in Bulletin Ox-41.

Steel Data Sheets
Wheelock, Lovejoy & Co. gives analyses, physical properties, heat treating instructions, and applications of Hy-Ten, Economo, and S.A.E. alloy steels in concise and easily usable form. Bulletin Ox-74.

Gear Steels
Those who have gear problems of any type can get valuable assistance from Endicott Forging & Mfg. Co., specialists in the manufacture of gear blanks. They carry in stock a large assortment of standard gear analyses and will manufacture to customer's blueprints and specifications. Bulletin Ox-65.

Forging Machines
The Acme Machinery Co. has just published an interesting bulletin on a distinctly new forging machine—the Model 35 Acme. This booklet illustrates and fully describes the new Acme Eccentric Header Slide which eliminates entirely the conventional Pitman construction. Bulletin Ox-39.

Swedish Tool Steels
"Pure-Ore" is a high carbon, high chromium Swedish steel especially valuable for dies in high production work. It is described in a folder by Kloster Steel Co., which is accompanied by a second folder describing "Swed-Oil," a non-shrinking, oil hardening tool steel which assures safety in hardening. Bulletin Ox-72.

AMSCO Alloy
AMSCO Alloy is the heat and corrosion resistant alloy made by American Manganese Steel Co. Its many uses, including application suggestions on each different analysis, are given in Bulletin Ox-9.

Tool Room Furnace
A new type of lining and one-valve control are two of the features of the American Gas Furnace Co.'s new tool room oven furnace that would make it economical to replace many older furnaces now in operation. Fully described in Bulletin Ox-11.

Cast Iron Metallurgy
One of International Nickel Co.'s data sheets tells all about the metallurgy of nickel cast iron in a not-too-technical manner. Special applications to petroleum production equipment are stressed. Bulletin Ox-45.

Electrotinning
E. I. du Pont de Nemours & Co.'s new manual on the sodium stannate-acetate electrotinning process is particularly timely. Electrodeposition, at first considered useful only for tin coating of recessed and irregularly shaped objects, by reason of recent improved and economical methods is now being considered favorably for all types of work. Bulletin Ox-29.

Double Strength Steel
A large fund of authentic information on Republic Steel Corp.'s new double strength steel is contained in an article by Howard L. Miller reprinted from *Metal Progress*. This steel promises wide application where a high tensile steel is required. Bulletin Ox-8.

Grain Size Measure
Classification of steels by grain size has become such an important laboratory procedure that Bausch & Lomb Optical Co., at the suggestion of Dr. Marcus A. Grossmann, has developed a grain size measuring eyepiece for microscopes which makes the determination a simple, routine matter. Described in Bulletin Ox-35.

Machine Steels
Because of the rapidly increasing use of rolled steel in machine construction Illinois Steel Co., in collaboration with Carnegie Steel Co., has prepared a handsome technical booklet on this subject. It is one of the most complete works ever offered to cover this new field. Bulletin Ox-1.

Refractory Mortars
How a good refractory mortar, properly fulfilling its functions of air-seal, cushion, and bond, will pay for itself in the extended service of furnace brickwork is told in Babcock & Wilcox's bulletin giving properties and recommendations for using various mortars and plastics. Bulletin Ox-75.

Optical Pyrometer
A simplified optical pyrometer which is compact, easy to operate, light, and entirely self-contained is invaluable in iron and steel manufacturing plants, heat treating, forging, rolling, and wire drawing plants. Such an instrument is marketed by Pyrometer Instrument Co. and is fully described in Bulletin Ox-37.

Industrial Thermometers
A striking new Industrial Thermometer Catalog has just been issued by C. J. Tagliabue Mfg. Co. It contains 24 pages of conveniently arranged listings of industrial thermometers, miscellaneous metal and woodback thermometers, hygrometers, U gages, mercurial vacuum gages and mercurial barometers. Bulletin Ox-62.

Electromet Review
A very attractive new house organ has recently made its appearance. It gives news and views of alloy steels and irons, but is mostly concerned with stainless steels. Electro Metallurgical Co. publishes it. Bulletin Ox-16.

Convected Air Furnaces
A novel application of the principle of mechanical convection to transfer heat uniformly around and through parts being heat treated is provided by a patented rotary fan. This equipment is incorporated in the convected air tempering furnaces described by Despatch Oven Co. in Bulletin R-151.

Nickel-Copper Steels
Exceptional resistance to corrosion and abrasion, increased tensile strength, and higher ductility are the qualities claimed for Youngstown Sheet & Tube Co.'s new series of Yoloy steels. A summary of properties and notes on their characteristics are contained in Bulletin Ox-93.

Vanadium Facts
Revived after nearly 20 years is the house organ of Vanadium Corp. of America, "Vanadium Facts." This paper shows considerable thought and care in its preparation and contains valuable and interesting information on vanadium steels. Bulletin Ox-27.

Machining Handbook
This little handbook giving machining properties and a great deal of other related data for a wide variety of steels should be of much value in aiding the steel user to select the right steel for the right purpose. Union Drawn Steel Co. Bulletin Ox-83.

Brass and Copper Shapes
A general classification of the diversified products made by the American Brass Co. comprises copper and copper alloyed with zinc, tin, nickel, lead, silicon and manganese in all combinations that can be wrought into sheets, wire, rods, tubes and special shapes. Bulletin Ox-89.

Rotoblast
A new blast cleaning machine eliminates the need for compressed air as the abrasive driving agent. Pangborn Corporation tells how a rapidly spinning wheel propels the abrasive by controlled centrifugal force. Bulletin Ox-68.

Resistor Furnaces
Hevi Duty Electric Co. announces the first of a line of industrial furnaces using metallic resistor elements, permitting operating temperatures to 2300° F. in either oxidizing or reducing atmospheres. Bulletin Ax-44.

Long Time Creep Tests
Calorizing Co. offers a report presenting long time high temperature creep values on chromium-nickel alloys. This bulletin contains many pertinent data and recommendations as to safe working stresses for heat enduring castings at temperatures from 1400 to 2000° F. Bulletin Mr-26.

Fast-Cutting Steel
Bliss & Laughlin, Inc., offer an interesting technical folder on Ultra-Cut Steel, giving performance records of this high-speed screw stock on automatic screw machines. Physical data and microstructures are presented. Bulletin Ob-42.

Belt Preservatives
Houghton has something to say about belt preservatives in a folder containing information on when, how, and why to use preservatives or dressing. Various types are described. Bulletin Ayx-38.

X-Rays in Industry
General Electric X-Ray Co. has available a profusely illustrated brochure which gives the complete story of the industrial applications of X-Rays, the modern inspection tool. Bulletin Ma-6.

Stainless Steel Uses
The wide range of applications of Allegheny Metal, best known of Allegheny Steel Co.'s corrosion and heat resistant steels, is pictorially covered in a new and interesting booklet. Bulletin Ob-92.

Pyrometer Supplies
Claud S. Gordon Co. offers a large catalog giving prices and descriptions of the great variety of pyrometers and pyrometer accessories carried in stock for quick delivery. Bulletin Ob-53.

New Homo Furnace
The new Homo furnace described in a bulletin issued by Leeds & Northrup provides for even tempering on a very dense load. Automatic control includes a feature that prevents overshooting. Fine tempering on extra dense loads at low cost is provided. Bulletin Mx-46.

Forging Machines
National Machinery Co. has published a large and very attractive booklet which by excellent illustrations and well written text tells how forging machines are built and why they produce accurate forgings. Bulletin Ob-14.

New Way to Case Harden
Chapmanizing, the new method of surface hardening steel with nitrogen, is described in a very attractive booklet of Chapman Valve Mfg. Co. Information is given out on the method itself and on its metallurgical advantages. Bulletin Ob-80.

Titanium in Steel
The use of ferro carbon-titanium in steel is thoroughly described in a booklet of Titanium Alloy Mfg. Co. Titanium's application in forgings, castings, rails, sheets and plates is interestingly explained. Bulletin M-90.

Heat Resisting Alloy
Ohio Steel Foundry Co. offers an elaborate booklet covering the production of Fahrite heat resisting alloy castings, illustrating their many uses and giving comprehensive metallurgical data. Bulletin Ob-40.

The Prevention of Rust
"Proof of Results" is the apt title of a new booklet issued by Dearborn Chemical Co. Dozens of photographs, supported by an interesting text, show how No-Ox-Id keeps steel from rusting. Bulletin Mr-36.

Useful Wall Chart
Wyckoff Drawn Steel Co. offers a big new wall chart full of such useful data as comparative machinability of S.A.E. steels, tables for selecting steels according to machinability, cold forming properties, carburizing and hardening ability. Bulletin Ox-99.

Furnace Insulation
Johns-Manville offers to those who design or operate furnaces a new 72-page book describing insulation methods which improve performance and reduce operating costs. Requirements for each particular type of heating equipment are analyzed and detailed recommendations made accordingly. Bulletin Ox-100.

Spoilage Insurance
C. I. Hayes, Inc. has compiled a record of reports from over 300 users of their "Certain Curtain" controlled atmosphere furnaces showing how these furnaces have cut down spoilage in the heat treatment of tools and parts. Bulletin Sx-15.

Structural Welding
Reprints of an interesting article in *Journal* of the American Welding Society by A. F. Davis, covering welding of penstocks, a bubble tower, siphons, pipe lines, and an ocean pier, have been prepared by Lincoln Electric Co. Bulletin Sx-10.

Potentiometers
The construction and outstanding features of Brown potentiometer pyrometers are briefly described in an illustrated folder by Brown Instrument Co. Convincing testimonial letters from users are reproduced. Bulletin Sx-3.

Steel Specifications
A handy, up-to-date specification sheet for carbon and alloy steels is offered by Timken Steel & Tube Co. On one page are printed analyses of all important types of Timken steels. Bulletin Jy-71.

Controlled Steels
Carnegie Steel Co. has published a very interesting booklet which describes in some detail the process control used in the production of uniform steels. Bulletin Je-85.

Welding Metallurgy
J. H. Critchett, vice-president of Union Carbide & Carbon Co., has prepared an exceptionally informative discussion of the physical and chemical principles involved in the oxy-acetylene welding of steel. Bulletin Ayx-63.

Conveyor Furnaces
Continuous chain belt conveyor furnaces handle miscellaneous parts without pans or trays — they are efficient, uniform, and flexible in operation. Improved furnaces of this type are described by Electric Furnace Co. Bulletin Ayx-30.

Alcoa Aluminum
The second edition of Aluminum Co. of America's 92-page book on "Alcoa Aluminum and Its Alloys" is packed full of valuable technical and practical data on all phases of the subject. Bulletin Ayx-54.

Maintenance by Welding
Industrial maintenance by Thermit welding is illustrated by actual applications to repair of street and railroad tracks, large machine parts, marine castings, crankshafts, and similar articles. Economy and permanence are featured. Metal & Thermit Co. Bulletin Ayx-64.

Carburizing Steel
High strength and ductility, forgeability, and machinability, combined with superior case carburizing properties, permit the attainment of maximum production with minimum cost. Such properties are obtainable in Jones & Laughlin's Jalcase steel. Bulletin Mx-50.

Kanthal Alloys
C. O. Jelliff Mfg. Co. offers a descriptive booklet on Kanthal alloys. Certain of these alloys may be used as resistance elements; others are for furnace parts or other heat resisting applications. Full details are given in Bulletin Je-78.

High Tensile Steels
Three types of high tensile steel particularly adapted to the transportation industries are described in a folder from U. S. Steel Corp. These are a chromium-copper-silicon steel for corrosion resistance, a medium manganese steel, and a strong structural silicon steel. Bulletin Mx-79.

Molybdenum in 1934
Climax Molybdenum Co. presents their annual book giving new developments in molybdenum, particularly as an alloy with iron and steel. The engineering data presented are made clear by many tables and illustrations. Bulletin Dc-4.

Ultropak
Two booklets are issued by E. Leitz, Inc., one containing description and catalog of their Ultropak microscope equipment, and the other a series of quotations and illustrations from scientists using the method. Get both by asking for Bulletin Ayx-47.

Polishing Machine
A reprint of an article from the A.S.M. *Transactions* by O. E. Romig and J. C. Whetzel is supplemented by photographs, specifications, and other information on the Cincinnati Electrical Tool Co.'s new metallographic polishing machine. Bulletin Ox-97.

Tool Steel Selector
A wall chart, 30 x 20 in., to be used as a means for selecting the proper type of tool steel is offered by Carpenter Steel Co. to tool steel users in the U.S.A. only. Bulletin Jzx-12.

Silico-Manganese Steel
Silico-Manganese steel for heavy duty springs is the subject of Bethlehem Steel Co.'s new folder giving its properties and recommendations for heat treatment. Bulletin Jyx-76.

Electric Furnaces
The electric furnaces made by Hoskins Mfg. Co. are well presented in their latest catalog. Contents include data on 17 types of furnaces and some valuable information on Chromel resistance wires and thermocouples. Bulletin Sp-24.

Metameter
Information on Bristol Co.'s Metameter, which makes it possible to control temperatures, pressures, levels, and other process conditions or operations at any distant place, is contained in Bulletin Ax-87.

Phosphor Bronze
An interesting little history of bronze from antiquity to the present prefaces a complete description of the properties, composition, uses, and shapes available of Seymour phosphor bronze in a folder by Seymour Mfg. Co. Bulletin Jyx-48.

Alloy Castings
A new bulletin on corrosion and heat resisting alloy castings is offered by Michiana Products Corp., manufacturers of Fire Armor and Zorite and other heat and acid resisting castings. Bulletin Jyx-81.

The Review,
7016 Euclid Ave., Cleveland

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Position .....

Firm .....

Address .....

Free Literature

Burners and Valves

Auxiliary equipment for industrial furnaces that will insure proper heat production and correct combustion, such as oil and gas burners, blowers, regulating and shut-off valves, is fully described in Mahr Mfg. Co.'s illustrated booklet. Bulletin Jyx-5.

Die Steels

Darwin & Milner has two folders on their "Neor" non-deforming high carbon chromium steel and "Patent Cobaltchrome" steel for dies. Properties, applications, and detailed instructions for treatment are given. Bulletin Ox-91.

Heat Treating Manual

A folder of Chicago Flexible Shaft Co. contains conveniently arranged information on heat treating equipment for schools, laboratories and shops, and also illustrates the several types of Stewart industrial furnaces. Bulletin Ar-49.

Misco Alloys

Compositions, properties, and applications of Misco stainless, heat, and corrosion resisting castings are given in an illustrated folder offered by a pioneer producer, Michigan Steel Castings Co. Bulletin Mx-84.

Sheffield Steels

Wm. Jessop & Sons, Inc., have a leaflet which tells why a special anneal and a proper balancing of carbon, manganese and tungsten combine to make Sheffield Superior oil hardening steel non-distorting and easily machinable. Bulletin Jn-61.

Rockwell Tester

The Rockwell Superficial Hardness Tester is applicable to far thinner sheet and strip than the regular Rockwell. Its use for nitrided and case hardened parts is also described by Wilson Mechanical Instrument Co. in Bulletin Myx-22.

Neophot

"Neophot" is the name of a new metallograph of radically new design and universal adaptability. A pamphlet distributed by Carl Zeiss, Inc., gives its applications and features and is well illustrated with beautiful samples of micrographic work. Bulletin Jx-28.

Testing with Monotron

Shore Instrument & Mfg. Co. offers a new bulletin on Monotron hardness testing machines which function quickly and accurately under all conditions of practice. Bulletin Je-33.

Turbo-Compressors

The new items in Spencer Turbine Co.'s bulletin are a new and smaller "Midget" turbo for individual mounting, a single-stage line which effects new economies, and the gas-tight turbos for acid and explosive gases. Bulletin Mx-70.

Alloy Castings

Compositions, properties, and uses of the high nickel-chromium castings made by The Electro Alloys Co. for heat, corrosion and abrasion resistance are concisely stated in a handy illustrated booklet. Bulletin Fx-32.

Radium Radiography

Advantages of portability, ease of application and manipulation in examination of castings, forgings, molds, weldings, and assemblies are attributed to radium for industrial radiography. Details are given in a booklet issued by Radon Co. Bulletin Jx-56.

Big-End-Up

Gathmann Engineering Co. briefly explains the advantages of steel cast in big-end-up ingots, showing the freedom from pipe, excessive segregation and axial porosity. An 82% ingot-to-bloom yield of sound steel is usual. Bulletin Fe-13.

Tempering Furnace

Technical details and operating data on Lindberg Steel Treating Co.'s new Cyclone electric tempering furnace which has shown a remarkable performance record in steel treating operations, are given in Bulletin Fx-66.

Heat Resisting Alloys

Authoritative information on alloy castings, especially the chromium-nickel and straight chromium alloys manufactured by General Alloys Co. to resist corrosion and high temperatures, is contained in Bulletin D-17.

Recuperators

Results obtained with Carborundum Company's recuperators using Carbofrax tubes are fuel savings, closer temperature control, faster heating, and improved furnace atmosphere. Complete engineering data regarding application to various types of furnaces are given in Bulletin Fx-57.

Carburizing Boxes

Driver-Harris Co. devotes a folder to Nichrome cast carburizing boxes. Physical properties at room temperature and under operating conditions are given, as are the advantages of Nichrome castings for such service. Bulletin Jr-19.

Centrifugal Compressors

B. F. Sturtevant Co. has a line of centrifugal compressors designed particularly for industrial furnace applications. These are illustrated and described in Bulletin Myx-58.

Compounds and Lubricants

J. W. Kelley Co.'s line of Beacon Brand products—industrial oils, carburizing compounds, heat treating salts, greases, and cleaners—is described in a little booklet which also tells about the company's experience, equipment, and facilities for quick service. Bulletin Ox-102.

Mo-W High Speed Steel

In a four-page folder, The Cleveland Twist Drill Co. announces the development of a new steel for high speed metal-cutting tools. Mo-Max steels are particularly suited to tools subjected to severe conditions of heat and abrasion. Physical characteristics and heat treating temperatures are discussed. Bulletin Ox-103.

Casting Problems

Unusual casting problems that were solved by the use of National Alloy Steel Co.'s oxidation, corrosion, and abrasion resisting castings are shown in a clever pictorial manner in an attractive folder. Bulletin Ox-104.

DX Units

Surface Combustion Corp.'s DX unit is a machine for producing an inexpensive gas for controlled atmospheres in industrial heating processes. Its operation and applications are covered in Bulletin Ox-51.

Blast Nozzles

The advantages of Norbide for pressure blast nozzle liners are described in Norton Co.'s folder. It also gives prices, hose and gasket sizes and fittings and adaptor numbers and dimensions for special types. Bulletin Ox-88.

Aluminum Castings

A new edition of the British Aluminium Co.'s booklet on "Aluminum Alloy Castings" contains the latest casting specifications of the Society of Automotive Engineers and the American Society for Testing Materials in condensed form. Bulletin Ox-101.

Annealing Coiled Strip

How G-E bell-type furnaces for bright annealing coiled steel strip produce a uniform, high quality product is told by General Electric Co. in Bulletin Jyx-60.

Multi-Color Records

A handsome booklet describing Foxboro's multi-color potentiometer recorder for 2, 3, 4, or 6 temperatures reproduces charts in actual color. Specifications for one model are given. Bulletin Myx-21.

Pre-Heating Furnace

General heat treating operations up to 1900° F., pre-heating of high speed steel, annealing and firing of glass are some of the applications listed in American Electric Furnace Co.'s folder on their new model B-20 furnace. Bulletin Jx-2.

Heat Treating Bath

A new folder on A. F. Holden Co.'s Light Case, which is showing savings of 10 to 20% for depths of case up to 0.010 maximum as compared to sodium cyanide, is available. Bulletin Ax-55.

Forging and Wire Drawing

Two bulletins are offered by Ajax Mfg. Co. One tells about their air-clutch forging machines in 2 to 7-in. sizes, made according to the most advanced design. The second is concerned with the Ajax-Hogue wire drawer, an attachment for heading machines which presents new economies. Bulletin Ox-105.

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Address .....

Position Open

A well-known firm desires the services of a research metallurgist with the necessary vision and imagination to do original work.

He should have the commercial point of view rather than that of the pure scientist. His experience should preferably have been with cast iron, cast steel, and non-ferrous alloys.

The applicant should submit the following information:

1. Complete experience record, including education and employers.
2. Complete description of accomplishments in metallurgical research.
3. Contributions to technical society programs and literature.
4. References as to ability and character.
5. Compensation expected.
6. When available.
7. Where he can be interviewed.

Those interested should send this information to Box 9-3, the American Society for Metals, 7016 Euclid Ave., Cleveland, Ohio.

Irvin, President U. S. Steel, Will Be Banquet Speaker

The Annual Banquet of the American Society for Metals, to be held Thursday, Oct. 3, in the ballroom of the Palmer House, Chicago, will include a program of many interesting events.

One of the most important will be the principal speech, to be given by W. A. Irvin, president, U. S. Steel Corp., who will have much to tell A.S.M. members about trends in their business and prospects for the future.

The second Albert Sauveur Achievement Medal will be awarded at this time. The purpose of this award is to recognize a metallurgical achievement which has marked a basic advance in metallurgical knowledge.

The Henry Marion Howe Medal, for the best paper which appeared in the *Transactions* of the American Society for Metals during the past year, will be presented at this time, as will also the Past-President's Medal.

Tickets for the banquet will be $3.00, and each table will seat eight persons. Reservations should be forwarded either to the National Office of the Society or to headquarters at the Palmer House. Tickets may also be purchased at the registration desk during the Congress.

Plant Trips Form Part of Program

As has been the custom in past years, the National Metal Congress will again feature plant inspection trips every day during the week of Sept. 30 to Oct. 4.

Negotiations are under way by the A.S.M. to visit some of the interesting plants in the Chicago district, where the latest developments in various phases of ferrous and non-ferrous metallurgy can be seen. A definite schedule of trips will be available at the registration desks at the Palmer House and International Amphitheatre when the Convention opens.

Among the firms who have made preliminary arrangements for plant visits is the Illinois Steel Co. The South Works, at 3426 East 89th St., consists of 11 blast furnaces supplied by two ore docks; a three-vessel Bessemer plant; 43 open-hearth furnaces; all types of rolling mills; 5 electric furnaces; sintering plant; foundry; machine, forge, welding, and other shops.

At Lindberg Steel Treating Co. all special equipment will be in operation on the day of the visit, including the new process of flame hardening, which is not in operation every day. Some of the other interesting things to be seen there will be oil carburizing, nitriding, chapmanizing, Cyclone drawing, and atmosphere controlled high speed hardening, as well as the usual heat treating processes.

Stewart-Warner Corp., whose Alemite and die casting divisions are in Chicago, has made tentative plans to conduct small groups of about five through the plant twice a day for the duration of the Convention. In this way a large number will be able to inspect the plant in a thorough and detailed manner.

Details of what is to be seen at the other plants scheduled for inspection trips will be found in the Official Program distributed at the Convention.

Daily trips are also being sponsored by the A.W.S. and will include the International Harvester Co. Tractor Works, Lasker Boiler & Engineering Corp., John Mohr & Sons, Illinois Steel Co., Pullman-Standard Car Mfg. Co. and S. A. Healy Co.

Many Events Arranged For Ladies who Attend National Metal Congress

The ladies who will come to Chicago during the National Metal Congress and Exposition will find a very unusual program of entertainment arranged for them. An attractive headquarters for the ladies will be established in Parlor No. 1, Third Floor, Palmer House.

Ladies accompanying members of any one of the cooperating societies are invited to register there and make it their headquarters. This headquarters will be the starting point for all scheduled trips.

A registration fee of $3.00 to cover a portion of the expenses of these events will be charged for each lady.

The program is as follows:

Monday, Sept. 30

1:00 p. m.—The annual get-together luncheon in the Empire Room of the Palmer House, immediately followed by an automobile tour of Chicago's famous North Side.

Tuesday, Oct. 1

2:00 p. m.—Inspection tour and automobile ride through the famous South Side, visiting the University of Chicago known the world over as an educational and research center; also the famed Ida Noyes house, the International House and Jackson Park. A stop will be made at the very interesting Rosenwald Museum of Science and Industry.

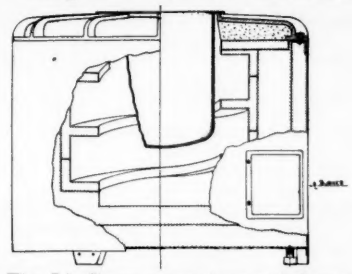
Wednesday, Oct. 2

1:30 p. m.—A visit to the Field Museum of Natural History in Grant Park, after which the Shedd Aquarium with its 10,000 exhibits will be inspected. A visit to the Adler Planetarium, where the drama of the skies is portrayed, may be substituted for the Field Museum.

Thursday, Oct. 3

12:30—Luncheon in the Wedgwood Room of the Marshall-Field Co. store, where a fashion show will be presented, and an inspection tour made.

New Pot Furnace Has Screw Shaped Combustion Chamber



The Lindberg screw type pot furnace is built with the combustion chamber in the shape of an internal screw. Such construction forces the gases of combustion to circle the pot two and one-half times before leaving the heating chamber.

Thus the flame travel is two and one-half times as long as with former methods, giving the gases opportunity for complete combustion. The burner fires entirely below the pot, eliminating flame impingement and providing a uniform ribbon of flame on all sides and from top to bottom, thus eliminating the causes of premature pot failure.

This new furnace provides increased efficiency in cyaniding, lead hardening and soft metal melting.

Further information may be obtained from Lindberg Engineering Co., 221 Union Park Court, Chicago.

List of Firms Exhibiting at National Metal Exposition

Air Reduction Sales Co., Booths E-23, E-19, F-20, F-16. Welding and cutting torches; weld testing machines; brazing and hard facing apparatus.

Ajax Electrothermic Corp., Booth A-4. Melting furnaces.

Allegheny Steel Co., Booth C-27. Stainless steels; sheets, bars, plates, tubing, wire, etc.

American Brass Co., Booth B-2. Welding rods; copper, brass and bronze products.

Edgar Allen Steel Co., Booth L-41. High speed and tool steel.

American Car & Foundry Co., Booth A-31. Forging heaters; rivet heaters; valve stem heaters.

American Cyanamid & Chemical Corp., Booth G-12. Case hardening compounds.

American Gas Association, Booth H-21. Industrial gas equipment.

American Gas Furnace Co., Booth I-23. Heat treating, carburizing and nitriding furnaces; rotary retort carburizing machines; oven and pot furnaces; burners; high heat melters.

American Hard Rubber Co., Booth L-11. Hard rubber products.

American Machine & Foundry Co., Booth M-24. Machinery; cast parts.

American Manganese Steel Co., Booth O-27. Heat and corrosion resistant castings; manganese steel castings and welding rod; hard surfacing welding rod.

American Metal Market, Booth A-35. Publications.

American Rolling Mill Co., Booth O-23. Stainless and alloy steels.

American Sheet & Tin Plate Co., Booths D-15, D-19, D-23, E-16, E-20. Alloy and stainless steels; sheet steel.

American Steel & Wire Co., Booths D-15, D-19, D-23, E-16, E-20. Alloy steel; stainless and heat resisting steel; wire; strip; cold finished bars.

Armstrong-Blum Mfg. Co., Booths L-30 and K-29. Metal sawing machines; hacksaws; tapping machines.

Armstrong Cork Products Co., Booth L-35. Insulating materials.

Aurora Metal Co., Booth E-11. Die castings.

Babcock & Wilcox Co., Booth G-11. Refractories.

Baldwin-Southwark Corp., Booth L-19. Testing machines.

Barrett-Cravens Co., Booth N-42. Trucks; elevators; platforms.

Bastian Blessing Co., Booth K-34. Welding and cutting equipment.

Bausch & Lomb Optical Co., Booth A-27. Metallurgical microscopes; spectroscopes; accessories.

Bell & Gossett Co., Booth J-7. Case hardening compounds; heat treating supplies.

Bellis Heat Treating Co., Booth M-18. Heat treating furnaces and salts.

Bethlehem Steel Co., Booths C-15, D-16, C-19, D-20. Carbon and alloy steels; corrosion resisting steel; wire; bolts; small tool products.

G. S. Blakeslee & Co., Booth K-20. Metal washing and cleaning machines.

Bristol Co., Booth G-4. Pyrometers; temperature control equipment.

The Brown Instrument Co., Booths J-15 and J-19. Indicating and recording instruments; automatic control equipment.

Burdett Mfg. Co., Booth H-26. Gas burners and valves.

Andrew C. Campbell Div., American Chain Co., Booth F-9. Tools and dies.

Carboloy Company, Inc., Booth J-3. Cemented carbide tools.

Carborundum Co., Booths B-9 and C-9. Abrasives; grinding and cutting wheels; refractory products.

Carnegie Steel Co., Booths D-15, D-19, D-23, E-16, E-20. Carbon and alloy steels; stainless and heat resisting steels.

Carpenter Steel Co., Booth B-11. Tool steels; stainless steels; torsion impact machine.

Case Hardening Service Co., Booth J-7. Case hardening compounds; heat treating materials and equipment.

Central Scientific Co., Booth M-6. Testing instruments.

Chapman Valve Mfg. Co., Booth A-32. Heat treating.

Chicago Eye Shield Co., Booth N-4. Goggles; eye shields; protective devices.

Chicago Flexible Shaft Co., Booth N-6. Heat treating furnaces; gasifier unit.

Chicago Steel Foundry Co., Booth K-28. Carbon and alloy steel castings.

Chicago Tool & Engineering Co., Booth L-23. Tools.

Climax Molybdenum Co., Booths L-42 and K-41. Molybdenum alloy steels and cast irons.

Colonial Broach Co., Booth I-3. Broaches.

Columbia Steel Co., Booths D-15, D-19, D-23, E-16, E-20. Carbon and alloy steels; steel shafts and bars.

Columbia Tool Steel Co., Booth F-15. High speed and tool steels.

Continental Industrial Engineers, Inc., Booth J-21. Furnaces and heat treating equipment.

Crown Rheostat & Supply Co., Booth M-19. Plating and polishing equipment; plating rheostats.

Crucible Steel Co. of America, Booth K-31. Tool steels; corrosion resistant steels; agricultural steels; drill steels.

Cyclops Steel Co., Booth O-19. Alloy and tool steels; plate; sheets; bars.

Darwin & Milner, Inc., Booth K-14. Tool steels.

Despatch Oven Co., Booth J-13. Gas heat treating furnaces.

Detroit Tap & Tool Co., Booth I-3. Tools and machinery.

Dewalt Products Corp., Booth M-5. Metal cutting machinery.

Divine Brothers Co., Booth M-19. Buffing and polishing machines.

Joseph Dixon Crucible Co., Booth M-29. Graphite crucibles; stoppers; greases.

Dow Chemical Co., Booth B-35. Magnesium alloys; sand castings, die castings, forgings, structural shapes, bars, rods, sheet and plate.

Driver-Harris Co., Booth D-27. Heat and corrosion resisting alloys.

E. I. du Pont de Nemours & Co., Booth F-32. Heat treating salts; sodium; plating chemicals; metal cleaners.

Eclipse Fuel Engineering Co., Booth G-23. Heat treating furnaces; burners; mixers; valves; pressed steel pots.

Electric Furnace Co., Booth G-8. Heat treating, nitriding, forging, and brazing furnaces.

Electro-Alloys Co., Booth K-15. Heat and corrosion resisting alloys.

Electro Metallurgical Sales Corp., Booth I-1. Ferro-alloys; heat and corrosion resisting steels.

Ensign-Reynolds, Inc., Booth G-21. Soft metal melting furnaces; soldering furnaces; burners; gas compressors; air blowers.

Firth Sterling Steel Co., Booth L-7. Alloy steels; tool steels; stainless steels.

J. B. Ford Sales Co., Booth D-31. Metal cleaners and burnishing compounds.

Foxboro Co., Booth G-16. Indicating, recording and controlling instruments.

Gathmann Engineering Co., Booth C-23. Ingot molds.

General Alloys Co., Booth H-4. Heat and corrosion resisting alloys; furnace parts.

General Electric Co., Booth A-3. Electric furnaces; electric welding machines.

General Electric X-Ray Corp., Booth D-32. X-ray testing equipment.

William D. Gibson Co., Booth M-35. Springs.

Gits Bros. Mfg. Co., Booth M-4. Oil seals; oil cups.

Globar Corp., Booths B-9 and C-9. High temperature heating elements.

Gogan Machine Co., Booth M-36. Hardness testing machines.

Claud S. Gordon Co., Booth I-10. X-ray films; pyrometers and accessories.

Grasselli Chemical Co., Inc., Booth E-35. Pickling inhibitors; fluxes; acids; chemicals for plating.

Great Lakes Steel Corp., Booth C-35. Sheet and strip steel; alloy steel.

Greenlee Foundry Co., Booth N-12-A. High test cast iron parts; Meehanite.

Grob Brothers, Booth N-41. Saws and filing machines.

Guyer Metal Products Co., Booth N-4-C. Metal products.

Halcomb Steel Co., Booth K-31. Tool steels; corrosion resistant steels; agricultural steels; drill steels.

Handy & Harman, Inc., Booth M-15. Precious metals and alloys.

Hardinge Brothers, Booth L-31. Lathes; screw machines; milling machines.

Harnischfeger Corp., Booth D-42. Electric welding equipment and motors.

Hauck Manufacturing Co., Booth F-37. Oil and gas burners; regulating valves.

C. I. Hayes, Inc., Booth C-34. Electric heat treating furnaces.

Haynes-Stellite Co., Booth I-1. Cutting tools; welding rods.

Heat Treating & Forging, Booth K-12. Publications.

Hevi Duty Electric Co., Booth F-11. Miscellaneous electric heat treating equipment.

Hobart Brothers Co., Booth E-7. Electric arc welding equipment.

W. J. Holliday & Co., Booth N-18. Steel shapes and factory supplies.

Hollup Corp., Booth K-3. Electric arc welders; electrodes and equipment.

Charles A. Hones, Inc., Booth J-22. Soft metal and soldering furnaces; oven furnaces; gas burners; tank heaters.

Hoskins Mfg. Co., Booth O-11. Heat resisting alloys; resistance wires; heating elements.

E. F. Houghton & Co., Booth D-9. Carburizing compounds; heat treating salts; industrial lubricants; cutting oils; leather belting and packings.

Illinois Steel Co., Booths D-15, D-19, D-23, E-16, E-20. Alloy steel; stainless and heat resisting steel; sheet; strip; wire.

Illinois Testing Laboratories, Inc., Booth J-11. Pyrometers; thermometers; thermocouples; meters.

Industrial Gas Engineering Co., Booth I-21. Heating furnaces and exhausters.

Ingersoll Steel & Disc Co., Booth L-3. Stainless steels; clad metals.

International Nickel Co., Inc., Booths E-2 and D-2. Nickel and nickel alloys.

Iron Age, Booth F-23. Publications.

Janette Mfg. Co., Booth N-2. Electric pumps and motors.

C. O. Jelliff Mfg. Corp., Booth M-33. Resistance wire; heat resisting alloys.

Jessop Steel Co., Booth N-11-A. Alloy steels; stainless steels; composite strip.

Johns-Manville, Booth L-12. Insulating materials; refractory cements; packings.

Jones & Laughlin Steel Corp., Booths C-11 and D-11. Hot and cold rolled steel; screw stock; S.A.E. steels.

J. W. Kelley Co., Booth K-30. Heat treating products; industrial oils; drawing compounds.

Kelley-Koett Mfg. Co., Inc., Booth F-5. X-ray apparatus.

C. M. Kemp Mfg. Co., Booth J-31. Gas premixers; burners.

Kloster Steel Corp., Booth A-19. Tool steels; alloy steels; dies and tools.

James M. Kobabe Co., Booth G-28. Gas burners.

K. O. Lee & Son Co., Booth K-23. Machine tools.

Leeds & Northrup Co., Booths E-42 and D-41. Heat treating furnaces; pyrometers and controlling instruments.

E. Leitz, Inc., Booth L-24. Microscopes; accessories and auxiliary devices for metal photomicrography.

Lincoln Electric Co., Booth H-3. Electric welding equipment; welding supplies.

Lindberg Engineering Co., Booths J-8 and I-7. Heat treating furnaces; pot furnaces; controls.

Lindberg Steel Treating Co., Booths I-7 and J-8. Heat treating equipment.

Linde Air Products Co., Booth I-1. Welding and cutting apparatus; welding gases.

Ludlum Steel Co., Booth C-42. Tool steels; stainless steels; nitralloy.

Lufkin Rule Co., Booth M-37. Precision tools; micrometers; gages; measuring tapes; rules.

Lydon Brothers, Booth G-22. Heat treating furnaces.

Machinery, Booth A-23. Publications.

Macklin Co., Booth E-15. Grinding wheels; cut-off machines.

Magnaflux Corp., Booth F-19. Inspection method and equipment.

Magnetic Analysis Corp., Booth C-41. Magnetic analysis equipment.

Mahr Mfg. Co., Booth M-11. Oil and gas furnaces; burners.

Manhattan Rubber Mfg. Co., Booth F-7. Grinding wheels; cut-off machines.

Marburg Brothers, Inc., Booth F-30. Cutting tools; gages; pneumatic hammers.

Charles A. Martin Co., Booth G-20. Valves and controls.

Metal & Thermit Corp., Booth D-30. Welding electrodes and equipment.

Metal Forming Corp., Booth N-8-A. Hollow moldings; welded, lock and butted joint tubing.

Metallizing Co. of America, Booth N-1. Metal spraying equipment.

Metals & Alloys, Booth M-32. Publications.

Lee B. Mettler Co., Booth G-28. Gas burners.

Michiana Products Corp., Booth H-7. Heat and corrosion resistant alloy castings; oil filters.

Michigan Steel Casting Co., Booth K-36. Heat and corrosion resisting castings.

Michigan Tool Co., Booth I-3. Cutting tools; hobs; tungsten carbide tools.

A. Milne & Co., Booth L-41. Tool steels; drill steel; special sections; cutlery sheets.

W. H. Miner, Inc. Laboratory, Booth M-7. Testing laboratory.

Minneapolis-Honeywell Regulator Co., Booth J-15. Automatic control systems; indicating and recording instruments.

Molybdenum Corp. of America, Booth F-25. Molybdenum steels and alloys.

National Cylinder Gas Co., Booth L-15, Oxygen; acetylene; cutting and welding machines; welding rods; testing machines.

National Industrial Publishing Co., Booth F-19-A. Publications.

National Tube Co., Booths D-15, D-19, D-23, E-16, E-20. Tubing.

New Jersey Zinc Co., Booths B-23 and C-20. Zinc alloys; die castings.

North American Mfg. Co., Booth M-34. Gas and oil combustion equipment.

Norton Co., Booth A-41. Grinding wheels and abrasive products.

Oakite Products, Inc., Booth H-10. Cleaning compounds.

Oil Well Supply Co., Booths D-15, D-19, D-23, E-16, E-20. Alloy steels; stainless and heat resisting steels.

Tinius Olsen Testing Machine Co., Booth A-15. Testing machines and other instruments.

Page Steel & Wire Division, American Chain Co., Inc., Booth E-32. Welding wire.

Park Chemical Co., Booth C-32. Case hardening compounds.

Parker-Kalon Corp., Booth K-7. Screws and fastening devices; bolts and nuts.

Partlow Corp., Booth I-24. Temperature controls; thermometers.

Pennsylvania Salt Mfg. Co., Booth K-10. Industrial salts and chemicals.

Perfection Tool & Metal Heat Treating Co., Booth N-4-A. Heat treating.

Plibrico Jointless Firebrick Co., Booth I-8. Refractories.

Radon Co., Inc., Booth B-19. Radium radiographic equipment.

Republic Steel Corp., Booths B-3, B-5, C-3, C-5, D-3. Alloy steels; stainless and heat resisting steels; tubing; bolts and nuts; architectural sections.

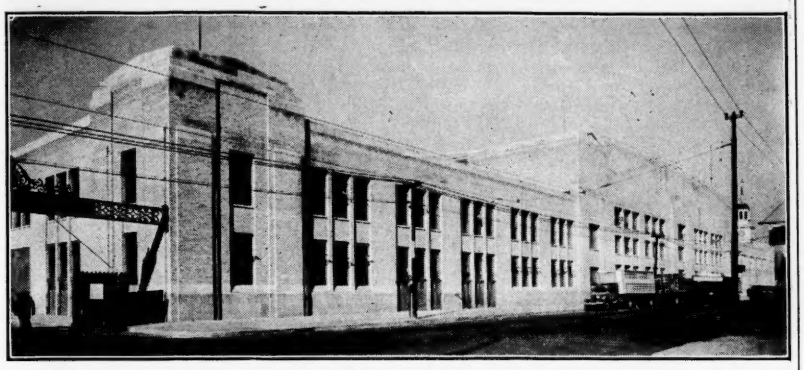
Rex Products & Mfg. Co., Booth K-11. Metal cleaners.

Rich Mfg. Co., Inc., Booth O-3. Electric arc saws.

Rodman Chemical Co., Booth N-19. Carburizing compounds; quenching oil.

International Amphitheatre, Chicago

43rd and Halsted Sts.



Only a hint is given in this picture, of the vast amount of space that will be given over to displays, many of them in actual operation, by the firms listed below and on the page opposite.

List of Exhibitors at the Metal Exposition

John A. Roebling's Sons Co., Booth B-42. Wire and wire rope; cables; woven wire fabrics.

Ruud Mfg. Co., Booth H-23. Water heaters; boilers.

Joseph T. Ryerson & Son, Inc., Booth F-12. Alloy and tool steels; stainless and heat resisting steels; bearing metal; cold rolled steel; plate; welding rods.

Schaar & Co., Booth N-16. Laboratory and scientific apparatus.

Scully Steel Products Co., Booths D-15, D-19, D-23, E-16, E-20. Structural shapes; bars; plates; tubes.

Selas Co., Booth G-34. Gas premixers; burners; soldering systems.

Sellers Engineering Co., Booth J-27. Gas boilers, burners, and combustion units.

Sellstrom Mfg. Co., Booth N-4-B. Goggles; eye shields; welding helmets.

Seymour Mfg. Co., Booth M-19. Nickel silver; phosphor bronze.

Shore Instrument & Mfg. Co., Booth M-31. Hardness testing instruments.

Sivyer Steel Casting Co., Booth J-10. Steel castings; heat resisting castings.

South Bend Lathe Works, Booth O-15. Lathes.

Spencer Turbine Co., Booth H-11. Air compressors; vacuum cleaners.

Star Electric Motor Co., Booth M-16. Electric motors, dynamos, generators.

Steel, Booth E-34. Publications.

Steel & Tubes, Inc., Booth D-3. Tubing.

Steel City Testing Laboratory, Booth L-8. Testing machines.

Steel Publications, Inc., Booth K-12. Publications.

Charles G. Stevens Co., Booth M-8. Wire; strip steel; cold drawn shapes; non-ferrous shapes; hot rolled steel; crucible tool steel.

Stewart Die Casting Corp., Booth M-3. Die castings.

N. A. Strand & Co., Booth K-24. Flexible shaft machines and attachments.

D. A. Stuart & Co., Booth A-4. Lubricants and cutting oils; lubricant testing machines.

Surface Combustion Corp., Booth H-25. Heat treating furnaces; burners; accessories.

Sutton Engineering Co., Booth L-29. Straightening machinery.

C. J. Tagliabue Mfg. Co., Booth I-11. Indicating, recording and controlling pyrometers.

Tennessee Coal, Iron & Railroad Co., Booths D-15, D-19, D-23, E-16, E-20. Alloy steels; bars and shapes.

Thermo Control Devices, Inc., Booth L-1. Pyrometers and control instruments; auxiliary equipment.

Thomas Steel Co., Booth E-19-A. Cold rolled strip steel.

Timken Steel & Tube Co., Booth A-9. Alloy steels.

Titanium Alloy Mfg. Co., Booth D-35. Titanium alloys and compounds; iron and steel castings; sheet and tin plate; ceramics and industrial chemicals.

Udylite Co., Booth A-1. Plating equipment.

Una Welding, Inc., Booth B-31. Arc welding machines.

Union Carbide Co., Booth I-1. Welding and cutting apparatus; ferro-alloys; carbon products; oxygen and acetylene.

United States Steel Corp., Booths D-15, D-19, D-23, E-16, E-20. Carbon and alloy steels; stainless steels; high tensile steels; wire; strip; bars; tubes; sheets; springs.

Universal Steel Co., Booth O-19. Steel plate; sheets; bars.

Vanadium Alloys Steel Co., Booth B-27. Vanadium steel; tool steels.

Vanadium Corp. of America, Booth A-16. Vanadium alloys and compounds.

Vapofier Corp., Booth L-23-A. Oil burners.

Victor Saw Works, Inc., Booth L-41-A. Hack saw blades; hack saw machines.

Vulcan Crucible Steel Co., Booth M-23. Forgings; tools; special steels.

Waterbury Farrel Foundry & Machine Co., Booth M-20. Wire drawing machinery.

Welding Engineer Publishing Co., Booth K-19. Publications.

Wells Mfg. Corp., Booth N-37. Metal cutting saws.

Wesley Steel Treating Co., Booth K-18. Heat treating.

Western Foundry Co., Booth M-24-A. Aluminum castings; semi-steel castings.

Westinghouse Electric & Mfg. Co., Booths B-15 and C-16. Electric heat treating furnaces; electric welding equipment.

Wheelock, Lovejoy & Co., Inc., Booth E-27. Alloy steels; tool steels; machinery steels.

Wickwire Spencer Steel Co., Booth C-31. Wire and wire products.

Wilkens-Anderson Co., Booth M-2. Microscopes; metallographic equipment.

Youngstown Sheet & Tube Co., Booth A-24. Alloy steels; structural shapes; sheet; bars.

Ziv Steel & Wire Co., Booth K-14. Tool steel; wire.

Free Trip Planning Service Available to Motorists

A free trip planning service is being offered by the Conoco Travel Bureau to those who plan to motor to Chicago for the National Metal Congress, Sept. 30 to Oct. 4.

The service includes highway maps individually marked, detailed road information, literature describing the points of interest to be met en route, hotel and cottage camp directories, and a passport entitling the holder to special travel privileges.

This service may be obtained by writing the Conoco Travel Bureau, Denver, Colo., asking for travel service to the Chicago convention of the American Society for Metals.

Program of the American Welding Society at National Metal Congress

Monday, Sept. 30

9:30 - 5:00 p. m.—Palmer House, Registration

1:45 p. m.—Palmer House

Opening Session

Introduction of President of American Welding Society, by D. C. Wright, chairman, Chicago Section.

Address of Welcome.

Presentation of Miller Memorial Medal Award.

2:30 p. m.—Palmer House

Technical Session

BRIDGE WELDING—A REVIEW OF THE LITERATURE, by F. H. Frankland, vice-chairman, Committee to Study Welding of Highway and Railroad Bridges.

NITROGEN IN METALLIC ARC WELD METAL, by J. W. Miller, Reid Avery Co.

Tuesday, Oct. 1

9:45 a. m.—Palmer House

Fundamental Research in Welding

SPOT WELDING PROBLEMS, by J. H. Zimmerman, Massachusetts Institute of Technology.

BEND TESTING OF WELDS—A SUMMARY, by M. F. Sayre, Union College.

ADVANTAGES OF WELDING IN CONTINUOUS STRUCTURES, by Inge Lyse, Lehigh University.

2:00 p. m.—Palmer House

Fundamental Research in Welding

ARC WELDING WITH PURE IRON, by Gilbert E. Doan, Lehigh University.

INVESTIGATIONS OF RESIDUAL STRESSES, by R. G. Jamieson, McGill University.

TESTS TO DETERMINE THE FEASIBILITY OF WELDING THE STEEL FRAMES OF BUILDINGS FOR COMPLETE CONTINUITY, by W. M. Wilson, University of Illinois.

CREEP TESTS OF WELDS, by N. F. Ward, University of California.

7:30 p. m.—Palmer House

Conference

Conference and Meeting of Fundamental Research Committee, American Bureau of Welding.

Wednesday, Oct. 2

9:45 a. m.—Palmer House

Technical Session

FABRICATED COMPOSITE DIES, by K. Janiszewski, Superior Steel Products Co.

WELDING ALL-METAL RADIO TUBES, by W. H. Gibb, Thomson Gibb Electric Welding Co.

A NEW GENERAL-PURPOSE METER FOR RESISTANCE WELDING, by C. Stansbury, Cutler-Hammer, Inc.

2:00 p. m.—Palmer House

Symposium on Methods of Minimizing Distortion

1. PRESSURE VESSELS, by J. T. Phillips, Foster Wheeler Co.
2. REPAIR WELDING, by Geo. Hettrick, Anchor Welding Service, Inc.
3. LIGHT GAGE STEEL, by J. H. Blaha, General Household Utilities Co.

MACHINE TORCH CUTTING AND FABRICATION OF TOOL EQUIPMENT, by P. H. Danly, Danly Machine Specialities Co.

Thursday, Oct. 3

9:45 a. m.—Palmer House

Symposium on Low Alloy Steels for Welding Purposes

THE DEVELOPMENT AND USE OF LOW ALLOY HIGH TENSILE STEELS IN WELDED CONSTRUCTION, by A. E. Gibson, The Wellman Engineering Co.

WELDING OF ALLOY STEELS, by H. L. Miller, Republic Steel Corp., J. C. Holmberg, Struthers-Wells-Titusville Corp., and Corbin Chapman, Hedges-Walsh-Weidner Co.

2:00 p. m.—Palmer House

Technical Session

WELDING OF ALLOY STEELS, by J. C. Hodge, Babcock & Wilcox Co.

EFFECT OF GENERATOR CHARACTERISTICS ON THE WELD, by J. H. Blankenbuehler, Westinghouse Electric & Mfg. Co.

ELECTRICAL CHARACTERISTICS OF THE WELDING ARC, by S. C. Osborne, Wilson Welder & Metals Co., Inc.

RESISTANCE WELDING OF COPPER ALLOYS, by I. T. Hook, American Brass Co.

7:30 p. m.—Palmer House Red Lacquer Room

Annual Banquet and Dance

Chicago Chapter Holds Most Successful Outing

Chicago Chapter, June 22—The annual outing at the "Farm" on River Road was the most successful held by the A.S.M. in its many years of existence in Chicago.

Attendance of over 300 was surprising in view of the Superintendents' and Foremen's Outing held the same day at Brown Lake.

Congratulations and thanks go to the Entertainment Committee for, first, no speeches; second, June West and her group of entertainers, especially the little fan dancer with good foot control.

An additional feature number by Francis P. Hammerle in his "napkin dance" displayed much gusto if not grace.

Al Lindberg's leading of group songs went far in furthering good fellowship.

Fair weather and good food are things that can't be planned on, but the Chapter was fortunate in having both.

Plenty of drinks and no drunks completed an enjoyable day.

Employment Service

Address answers care of A. S. M., 7016 Euclid Ave., Cleveland, unless otherwise stated

TECHNICAL GRADUATE: 23, married. B.S. and M.S. in metallurgy. Now employed in cold melt electric furnace operation. Desires minor opening with opportunity for advancement. Box 9-5.

METALLURGICAL ENGINEER: Young, technical graduate. Experienced melter on high speed, stainless, and low alloy steels. Also metallurgical research. Box 9-10.

WELDING EXPERT: Six years laboratory and research work on all phases of electric arc welding. Preceded by 1½ years as supervisor of automatic welding, designing work handling machines, training operators, etc. Attended Georgia School of Technology and Westinghouse Welding School. Box 9-15.

METALLURGICAL ENGINEER: College graduate with 6 years of progressive professional experience in important and responsible physical metallurgical work. Thoroughly qualified to control and supervise either laboratory or heat treat and forging. Box 9-20.

MASTER'S DEGREE in metallurgical engineering. Experience in plant metallurgy, physical testing, inspection, production of cold finished steel bars. Experienced heat treater. Metallographic research work published. Box 9-25.

(See position open on p. 5.)

Papers to Be Presented at A.S.M. Technical Sessions

Monday, Sept. 30

10:00 a. m.—Palmer House Ball Room

Metallography Session

ON THE PREPARATION OF IRON AND STEEL SPECIMENS FOR MICROSCOPIC INVESTIGATIONS, by F. F. Lucas, Bell Telephone Laboratories, New York City.

OXALIC ACID AS AN ELECTROLYTIC ETCHING REAGENT FOR STAINLESS STEELS, by G. A. Ellinger, National Bureau of Standards, Washington, D. C.

ON NAMING THE AGGREGATE CONSTITUENTS IN STEEL, by J. R. Vilella, G. E. Guellich, U. S. Steel Corp., Kearny, N. J., and E. C. Bain, U. S. Steel Corp., New York City.

2:00 p. m.—International Amphitheatre

Research Session

ARC WELDING OF HIGH CARBON AND ALLOY STEELS, by T. N. Armstrong, Norfolk Navy Yard, Portsmouth, Va.

A DILATOMETRIC STUDY OF THE ALPHA-GAMMA TRANSFORMATION IN HIGH PURITY IRON, by C. Wells, R. A. Ackley and R. F. Mehl, Carnegie Institute of Technology, Pittsburgh.

SOME TRANSIENT PHASE CHANGES DURING THE GRAPHITIZING REACTION, by H. A. Schwartz, H. H. Johnson, and C. H. Junge, National Malleable and Steel Casting Co., Cleveland.

4:30 p. m.—International Amphitheatre

Educational Lecture

HEAT TREATMENT OF STEEL, by Dr. M. A. Grossmann, Illinois Steel Co., Chicago.

7:30 p. m.—International Amphitheatre

Educational Lecture

SPECTROGRAPHIC ANALYSIS, by Dr. E. J. Martin, General Motors Corp., Detroit.

Tuesday, Oct. 1

10:00 a. m.—Palmer House Ball Room

General Session

CHROMIUM STEELS OF HIGH NITROGEN CONTENT, by Russell Franks, Union Carbide & Carbon Research Laboratories, Niagara Falls, N. Y.

CORRELATION OF FAILURES FROM EMBRITTLEMENT OF 4 TO 6% CHROMIUM STEEL WITH THE NOTCHED BAR IMPACT TEST, by H. M. Wilten, The Texas Co., Port Arthur, Texas.

FACTORS INFLUENCING THE NATURE OF THE CUTTING SPEED-TOOL LIFE CURVES, by O. W. Boston, W. W. Gilbert and C. E. Kraus, University of Michigan, Ann Arbor.

10:00 a. m.—Palmer House—Parlor 10

General Session (Simultaneous)

HIGH TEMPERATURE PROPERTIES OF NICKEL-COBALT-IRON BASE AGE-HARDENING ALLOYS, by C. R. Austin, Pennsylvania State College, State College, Pa.

OBSERVATIONS ON THE OXIDATION OF STEEL, by M. Baeyertz, Illinois Steel Co., Chicago.

2:00 p. m.—International Amphitheatre

High Temperature Session

PHYSICAL PROPERTIES OF METALS AS AFFECTED BY AMMONIA SYNTHESIS, by H. L. Maxwell, E. I. du Pont de Nemours & Co., Wilmington, Del.

INFLUENCE OF CARBON CONTENT ON THE HIGH TEMPERATURE PROPERTIES OF STEELS, by A. E. White, C. L. Clark, University of Michigan; and R. L. Wilson, Timken Steel & Tube Co., Canton, Ohio.

A NEW HEAT RESISTANT ALLOY, by S. L. Hoyt and M. A. Scheil, A. O. Smith Corp., Milwaukee, Wis.

4:30 p. m.—International Amphitheatre

Educational Lecture

HEAT TREATMENT OF STEEL, by Dr. M. A. Grossmann, Illinois Steel Co., Chicago.

7:30 p. m.—International Amphitheatre

Educational Lecture

SPECTROGRAPHIC ANALYSIS, by Dr. E. J. Martin, General Motors Corp., Detroit.

Wednesday, Oct. 2

9:30 a. m.—Palmer House Ball Room

Annual Meeting of the A.S.M.

EDWARD DE MILLE CAMPBELL MEMORIAL LECTURE, by H. W. McQuaid, Republic Steel Corp., Massillon, Ohio.

2:00 p. m.—International Amphitheatre

Grain Size Session

EFFECT OF CARBON, OXYGEN AND GRAIN SIZE ON THE MAGNETIC PROPERTIES OF IRON-SILICON ALLOYS, by T. D. Yensen, Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa., and N. A. Ziegler, West Penn Electric Co., Pittsburgh.

GRAIN SIZE AND ITS INFLUENCE ON SURFACE DECARBURIZATION OF STEEL, by D. H. Rowland and Clair Upthegrove, University of Michigan, Ann Arbor.

AUSTENITIC GRAIN SIZE IN CAST IRON, by D. W. Murphy and W. P. Wood, University of Michigan, Ann Arbor.

4:30 p. m.—International Amphitheatre

Educational Lecture

HEAT TREATMENT OF STEEL, by Dr. M. A. Grossmann, Illinois Steel Co., Chicago.

7:30 p. m.—International Amphitheatre

Educational Lecture

SPECTROGRAPHIC ANALYSIS, by Dr. E. J. Martin, General Motors Corp., Detroit.

Thursday, Oct. 3

10:00 a. m.—Palmer House Ball Room

Research Session

NOTES ON THE SOLIDUS TEMPERATURES IN THE SYSTEMS IRON-TUNGSTEN AND IRON-MOLYBDENUM, by W. P. Sykes, General Electric Co., Cleveland.

THE INFLUENCE OF DEOXIDATION ON THE AGING OF MILD STEELS, by B. N. Daniloff, R. F. Mehl, Carnegie Institute of Technology, Pittsburgh; and C. H. Herty, Jr., Bethlehem Steel Co., Bethlehem, Pa.

THE AGING OF STEEL, by E. S. Davenport, U. S. Steel Corp., Kearny, N. J., and E. C. Bain, U. S. Steel Corp., New York City.

2:00 p. m.—International Amphitheatre

Research Session

ENDURANCE OF CASE HARDENED GEARS, by O. W. McMullan, International Nickel Co., Bayonne, N. J.

PICKLE PITTING BY ELECTROLYTIC POTENTIALS AS AFFECTED BY SCALING TEMPERATURES, by C. H. McCollam and D. L. Warrick, Timken Steel & Tube Co., Canton, Ohio.

DAMPING CAPACITY, A FACTOR IN FATIGUE, by G. R. Brophy, General Electric Co., Schenectady, N. Y.

4:30 p. m.—International Amphitheatre

Educational Lecture

HEAT TREATMENT OF STEEL, by Dr. M. A. Grossmann, Illinois Steel Co., Chicago.

7:00 p. m.—Palmer House Ball Room

Annual Banquet of the A.S.M.

Friday, Oct. 4

10:00 a. m.—Palmer House Ball Room

Tool Steel Session

HARDENING CHARACTERISTICS OF ONE PER CENT CARBON TOOL STEELS, by T. G. Digges and Louis Jordan, National Bureau of Standards, Washington, D. C.

INTERPRETATION OF TORSION IMPACT PROPERTIES OF CARBON TOOL STEEL, by G. V. Luerssen and O. V. Greene, Carpenter Steel Co., Reading, Pa.

CONTRIBUTORY EFFECTS OF FURNACE ATMOSPHERES ON THE GRAIN SIZE OF MOLYBDENUM HIGH SPEED STEEL, by Arthur Phillips and M. J. Weldon, Yale University, New Haven, Conn.

2:00 p. m.—International Amphitheatre

Steel Making Session

OPEN-HEARTH TEMPERATURE CONTROL, by Earnshaw Cook, American Brake Shoe & Foundry Co., Chicago Heights, Ill.

THE EFFECT OF DEOXIDATION ON THE RATE OF FORMATION OF FERRITE IN COMMERCIAL STEELS, by D. L. McBride, Carnegie Institute of Technology, Pittsburgh; C. H. Herty, Jr., Bethlehem Steel Co., Bethlehem, Pa.; and R. F. Mehl, Carnegie Institute of Technology, Pittsburgh.

EQUILIBRIUM IN THE REACTION OF HYDROGEN WITH FERROUS OXIDE IN LIQUID IRON AT 1600 DEGREES CENT., by John Chipman, American Rolling Mill Co., Middletown, Ohio, and M. Fontana, E. I. du Pont de Nemours & Co., Wilmington, Del.

4:30 p. m.—International Amphitheatre

Educational Lecture

HEAT TREATMENT OF STEEL, by Dr. M. A. Grossmann, Illinois Steel Co., Chicago.

Brown Instrument Co. Has New Line of Controllers

On its 75th Anniversary, The Brown Instrument Co. announces a new line of air-operated controllers for temperature, flow, pressure and liquid level.

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